Statement of Work

I. Title: APEX Maintenance and Enhancements
Contractor Name: ICF
Contract #: EP-W-12-010
WA #: 4-55
Period of Performance: Upon CO Approval – September 30, 2018**

****Modification to exercise 3 month extension of contract (through September 30, 2018) is with Contractor Officer for approval. Estimate shall include the extra 3 months as approval is imminent for exercising this 3-month optional quantity.**

II. Work Assignment Manager (WAM):

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Alternate WAM:

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III. Background:

The U.S. Environmental Protection Agency (EPA) developed the Air Pollutant Exposure Model (APEX) for use in regulatory and other applications. APEX serves as the inhalation exposure model for the Total Risk Integrated Methodology (TRIM) system developed by the Office of Air Quality Planning and Standards (OAQPS) with assistance from the National Exposure Research Laboratory (NERL). The purpose of this work assignment (WA) is to provide maintenance support to EPA for the APEX preprocessors, postprocessors, and core model. This WA will provide technical support to EPA with the maintenance and quality control of this system, thus enabling EPA to make available the best available technology for modeling population inhalation exposure to air pollutants. Timely correction of system errors is crucial to this effort.

The type of work to be performed under this statement of work is found within sections IV-B, IV-C, IV-D of contract no. EP-W-12-010. This work is part of EPA's continued efforts to be responsive to the needs of air pollution programs for protection of human health. This WA provides for maintenance and quality control of a key modeling tool, the Air Pollutant Exposure Model (APEX). The APEX modeling system consists of the core APEX model and preprocessor and postprocessing programs. The Contractor shall respond to all maintenance needs of the APEX modeling system as identified in this scope of work. The EPA work assignment manager

(WAM) is authorized to provide technical direction in accordance with the contract. This SOW instructs the Contractor to perform the following tasks which are described below.

IV. Description and Tasks:

Task 1. Work Plan

Within 20 days of the effective date of this WA, the Contractor shall submit a work plan describing the schedule for the WA completion and an estimate of the cost for completing the work. Following review of the work plan by the EPA WAM, the Contractor shall modify the work plan to reflect comments and recommendations by the WAM (if any exist). This final work plan, if modified, shall be submitted by the Contractor in accordance with the terms of the contract.

Task 2. Maintain Software Library

The Contractor shall maintain a Software Library for all APEX code. This library shall include the APEX core model, the APEX preprocessor programs, any new versions of these programs, and any additional support software EPA adopts in support of processing data for the APEX model.

The Contractor shall document and maintain the contents of the library through the use of the APEX System Maintenance Notebook. This shall include documenting problems discovered and their resolution and suggestions/comments for future improvements. The Contractor shall be responsible for distributing documentation for the library as software updates are made. This shall include preparing updated source code and executables, example input and output files, updated User's Guides, model change notices, and "readme" files for posting on EPA's Fate, Exposure, and Risk Analysis (FERA) web site.

Task 3. Errors and Troubleshooting

The Contractor shall perform troubleshooting for the purpose of error resolution and then modifications to APEX to correct problems identified by users of APEX, as directed by the EPA WAM. The Contractor shall test and verify the correct execution of each program and check for changes to the model results and runtime. The Contractor shall then 1) update the APEX System Maintenance Notebook and user's guide documentation, 2) transfer new code to the APEX library, 3) deliver new code and executables to the EPA WAM, and 4) prepare notices for EPA's FERA web site describing the code changes and their effect on the APEX model results.

Task 4. Model Refinements

The refinement of model code and user's guides shall consist of making technical improvements to the APEX system as they are identified for individual modeling analyses or by the modeling community as a whole. These refinements shall be requested by the EPA WAM as they are identified.

The Contractor shall incorporate any new code and/or input files into the APEX System Library, evaluate and document any changes in the APEX model results, and deliver these to the EPA

WA COR. The Contractor shall update the APEX System Maintenance Notebook and the User's Guides to reflect the refinements.

Task 5. ISES/ISEE APEX Course and Poster

The Contractor shall assist in the revision of APEX short-course materials to be conducted at the ISES/ISEE 2018 meeting. The goal of the short-course is to introduce features of APEX5 to participants, including a demonstration. The EPA WAM will provide the Contractor with the draft material, including instructional documentation, model input data, and presentation slides. The Contractor shall provide additional context, data, and presentation slides for the short-course, where appropriate, following technical direction provided by the EPA WAM.
The Contractor shall also prepare a draft poster on an APEX5 application to be delivered at the ISES/ISEE 2018 meeting in Ottawa. Following review by the EPA WAM, the Contractor shall make edits to the poster (if any). The Contractor shall make appropriate arrangements for one person to assist with the administering of the short course and assisting with presentation of the poster at ISES/ISEE 2018.

V. QA Requirements:

This WA involves modifications to the APEX modeling system. The Contractor shall perform quality control tests of the modified code to ensure that it works as intended, as specified in the SOW above. Documentation of the code modifications is part of the deliverables of this WA. The Contractor shall describe all of the quality control steps undertaken in the memoranda to be delivered under this WA.

VI. Deliverables:

A phone conference shall be arranged and conducted by the Contractor to discuss the initiation of the tasks with the EPA WAM within two weeks of approved WA. Subsequently, phone conferences shall be scheduled and conducted by the Contractor on an as needed basis to discuss with the EPA WAM the progress and any issues associated with the tasks. The Contractor shall adhere to the following schedule:

Task	Deliverable	Delivery Schedule
1	Work Plan	Within 20 days of effective date of WA
2	Source code and executables, example input and output files, User's Guides, and model change notices for posting on EPA's FERA web site.	As required. Final versions by 9/30/2018
3	Updated APEX System Maintenance Notebook, model code and executables	As required. Final versions by 9/30/2018
4	Updated APEX System Maintenance Notebook, model code and executables	As required. Final versions by 9/30/2018
5	Revised short-course materials and poster	Final versions by 8/1/2018

VII. Reporting Requirements:

The Contractor shall provide monthly progress reports in accordance with the terms of the contract. The Contractor shall provide all reports requested in the Statement of Work. The Contractor shall deliver to the EPA WAM updated code and documentation of modifications to the APEX model (in the form of updates to the APEX User's Guides and APEX System Maintenance Notebook) as the individual modifications are completed. The Contractor shall submit work products in electronic form: reports and memoranda in Microsoft Word, and data sets in text, Microsoft Access, or SAS format.